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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,308	03/22/2004	Ron Rotstein	CM06438H	1826
22917	7590	06/28/2005	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			TON, DANG T	
			ART UNIT	PAPER NUMBER
			2666	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/806,308

Applicant(s)

ROTSTEIN ET AL.

Examiner

DANG T. TON

Art Unit

2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4,6,7,9, 11-15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Alamouti et al. (5,933,421).

For claims 1-4,6,7,9, 11-15, and 17, Alamouti et al. disclose a method/system for frequency division duplex communications comprising multiplexing sub carriers of the OFDM system (see column 5 lines 22-23) between at Least two transmit antennas wherein the sub carriers are separated between the at least two transmit antennas so that a sub carrier and a minor sub carrier are not transmitted from a same transmit antenna of the at least two transmit antennas (see antennas 0 and 7 in Figure 1.7); and transmitting the sub carriers so that adjacent sub carriers are at least two sub carrier frequency bandwidths apart (see F1 to F4 in figure 1); transmitting further comprises toggling between data to be transmitted and zero (see demultiplexer in figure 1.10); receiving the transmitted sub carriers by a receiver system comprising one receive antenna and one receive processing path(see antennas 0-7 in figure 1.11); receiving the transmitted sub carriers from at least two receive antennas wherein the transmitted sub carriers are separated between the at least two receive antennas so that the sub carrier and the mirror sub carrier are not received from a

same receive antenna of the at least two receive antennas (see antennas 0-7 in figure 1.11); and

combining the received transmitted sub carriers from the at least two receive antennas into a single data stream (see mux in figure 1.11);

toggling between data to be transmitted and zero so that sub carriers

transmitted on a same antenna of either the first transmit antenna or the second transmit antenna are separated from an adjacent sub carrier transmitted on the

same antenna by two sub carrier frequency bandwidths (see F1 to F4 in figure 1);

toggling between the sub carriers received on the first receive antenna and

the second receive antenna to create a single data stream (see demultiplexer in figure 1.10) transmitting sub carriers of the OFDM system by multiplexing the

sub carriers between at least two transmit antennas wherein the sub carriers are separated between the at least two transmit antennas so that a sub carrier and a mirror sub carrier are not transmitted from a same transmit antenna of the at least two transmit antennas (see F1 to F4 in figure 1); and

receiving subcarries of the OFDM by multiplexing the sub carriers

between at least two receive antennas wherein the subcarries are separated

between the at least two receive antennas so that a sub carrier and a mirror

sub carrier are not received from a same receive antenna of the at least two receive antennas (see F1 to F4 in figure 1) (see antennas 0-7 in figure 1.11);

a transmit multiplexer which separates subcarries of the OFDM system

between at least two transmit antennas (see antennas 0 and 7 in Figure 1.7);

Art Unit: 2666

a switch providing a symbol rate so that adjacent sub carriers on a same antenna of the at least two transmit antennas are at least two sub carrier frequency bandwidths apart (see F1 to F4 in figure 1); and

the at least two transmit antennas which transmit the sub carriers to a receiver of the OFDM system (see antennas 0-7 in figure 1.11),

wherein a sub carrier and a mirror sub carrier of the sub carriers are not associated with the same transmit antenna of the at least two transmit antennas

wherein at least two transmit antennas are used comprising a first transmit antenna and a second antenna (see antennas 0 and 7 in Figure 1.7);

wherein the receiver comprises one receive antenna and one receive processing path. further comprising a receiver multiplexer for selecting between a first receive antenna and a second receive antenna (see antennas 0-7 in figure 1.11);

whereby mirror sub carriers are not selected by the receiver multiplexer of the enhanced OFDM system (see mux in figure 1.11); and

means for multiplexing sub carriers of the OFDM system (see column 5 lines 22-23) between at least two transmit antennas wherein the subcarriers are separated between the at least two transmit antennas so that a sub carrier and a mirror sub carrier are not transmitted from a same transmit antenna of the at least two transmit antennas (see antennas 0 and 7 in Figure 1.7),

and means for transmitting the sub carriers so that adjacent sub carriers are at least two sub carrier frequency bandwidths apart (see F1 to F4 in figure 1).

Art Unit: 2666

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5,8,and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti et al. in view of Fertner et al. (6,169,723).

For Claims 5,8,and 16, Alamouti et al. disclose all the subject matter of the claimed invention with the exception of the transmitted or received antennas comprising negative, even subcarriers and positive, odd sub carriers in a communications network. Fertner et al. (6,169,723) from the same or similar fields of endeavor teaches a provision of negative, even subcarriers and positive, odd sub carriers (see column 12 lines 40-42). Thus, it would have been obvious to the person of ordinary skill in the art at

Art Unit: 2666

the time of the invention to use negative, even subcarriers and positive, odd sub carriers as taught by Fertner et al. (6,169,723) in the communications network of Alamouti et al.

The negative, even subcarriers and positive, odd sub carriers can be implemented/modified into the network of Alamouti et al. since it does teach the OFDM. The motivation for using negative, even subcarriers and positive, odd sub carriers as taught by Fertner et al. (6,169,723) into the communications network of Alamouti et al. being that it provides much higher utilizations while reducing the interferences.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alamouti et al. in view of the background of invention of Hunton (6,449,303).

For claim 10, Alamouti et al. disclose all the subject matter of the claimed invention with the exception of wherein the OFDM system exhibits a reduction in peak to average power ratio related to I/N where N is equal to a number of transmit antennas of the at least two transmit antennas in the OFDM system. The background of invention of Hunton from the same or similar fields of endeavor teaches a reduction in peak to average power ratio related to I/N where N is equal to a number of transmit antennas of the at least two transmit antennas in the OFDM system s (see column 2 lines 6-15). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use a reduction in peak to average power ratio related to I/N where N is equal to a number of transmit antennas of the at least two transmit antennas in the OFDM system as taught by the background of invention of Hunton in the communications network of Alamouti et al.

The reduction in peak to average power ratio related to I/N where N is equal to a number of transmit antennas of the at least two transmit antennas in the OFDM system can be implemented/modified into the network of Alamouti et al. since it does teach the OFDM. The motivation for using a reduction in peak to average power ratio related to I/N where N is equal to a number of transmit antennas of the at least two transmit antennas in the OFDM system as taught by the background of invention of Hunton into the communications network of Alamouti et al. being that it provides much higher utilizations while controlling the power.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Scott (5,689,502) is cited to show systems which is considered pertinent to the claimed invention.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANG T. TON whose telephone number is 571-272-3171. The examiner can normally be reached on MON-WED, 5:30 AM-6:00 PM and Thur 5:30-9:30 A.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RAO SEEMA can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Ton

Application/Control Number: 10/806,308

Page 9

Art Unit: 2666

A handwritten signature in black ink, appearing to be 'Dang Ton', located above the official stamp.

DANG TON
PRIMARY EXAMINER